

In the Drawings

Enclosed are formal Figures 1 and 2 in place of the informal drawings originally filed.

Remarks

Formal Figures 1 and 2 in compliance with 37 CFR §1.121(d) have been submitted herewith in place of the informal drawings originally filed. No new matter has been incorporated into the formal drawings.

The title of the application has been amended as requested by the Examiner to more closely describe the subject matter of the invention.

Claims 1-3, 8, 9, 11, 13, and 14 have been amended. Claims 7, 10, and 18-25 have been cancelled. Claims 1-6, 8, 9, and 11-17 remain in the application. Reconsideration and allowance of these claims as now presented is respectfully requested.

Objections to Claims

Claims 7 and 22-25 stand objected to for informalities. Claims 7 and 22-25 have been cancelled in the instant amendment, thereby rendering moot the objections to the claims.

Rejection of Claims Under 35 U.S.C. §112

Claims 7-9 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to distinctly claim the subject matter of the invention. Claim 9 has been amended as requested by the Examiner to more distinctly claim the optional subendocardio/subepicardio

division function of the system of the present invention. The claim rejections under 35 U.S.C. §112 should accordingly be withdrawn.

Rejection of Claims Under 35 U.S.C. §103

Claims 1-6, 10, 14, and 17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sheehan et al (U.S. 5,734,739) in view of Clark (U.S. 6,174,285) and Klotz et al (U.S. 5,852,646). The pending claims have been amended to specify a specific data analysis approach relevant to studies of blood perfusion through a particular body region. Specifically, the claimed analysis approach utilizes a plurality of ultrasonic scans of the body region encompassing a plurality of distinct positions within such body region. The claimed software is specifically directed to calculate a statistical median value for each position among the plurality of data points generated in the plurality of ultrasonic scans. Such a statistical median value minimizes the impact of any background variability, such as temporary ultrasonic feedback noise, in the derivation of data from the ultrasonic scans. In short, the utilization of the median value in charting perfusion characteristics over time effectively eliminates temporary ultrasonic noise or other background misinformation from the analysis data sets utilized in the generation of visual

displays. Support for the amended claim language is found at page 19, lines 1-21 of the application as originally filed.

Nowhere do the cited references teach or suggest the use of statistical median values in the analysis of perfusion data obtained through ultrasonic imaging of targeted body regions. The Examiner cites Klotz et al. '646 for its discussion of subtracting background data from analysis data. The presently claimed invention, by contrast, normalizes the analysis data through a statistical median approach, which provides a unique and efficient methodology for obtaining reliable data sets in perfusion analyses.

The Sheehan et al. '739 reference in fact teaches away from the presently claimed statistical median data normalization procedure by describing the use of mean data in its data analysis. Such mean data, however, may be substantially skewed in the event of, for example, significant reflection energy intensity deviation from the majority of data points taken. The median analysis tool of the present invention essentially eliminates such data as background or temporary noise.

The presently amended claims further recite the automatic division of the multi-dimensional view of the

targeted body region into a plurality of user-defined cross-sectional segment views that graphically represent the entire body region ultrasonically imaged. Support for this claim language is found at page 18, lines 22-30 of the application as originally filed. No teaching of such cross-sectional segment views is found in the cited prior art. Such cross-sectional segmentation of the targeted body region greatly enhances assessability of the perfusion characteristics at various locations within the targeted body region, such as the myocardium. The Clark '285 reference that the Examiner cites as disclosing user-defined segments in fact teaches an external contour imaging system, and nowhere describes the capability of obtaining a plurality of cross-sectional segmented views of the entire targeted body region.

In addition, the presently claimed invention enables relative analysis among the distinct cross-sectional segments through color-coding of respective reflection energy intensities ultrasonically imaged. Such color-coding enables the relative quantitation of the various segments by assigning different colors to each distinct segment depending upon the reflection energy intensity obtained in the ultrasonic scans, so as to readily provide relative perfusion characteristics among the distinct

segments. Support for this claim language is found at page 18, lines 8-21 of the application as originally filed.

No such color-coding of cross-sectional segments of the ultrasonically scanned body region is contained in the cited prior art. The Examiner relies upon Reisfeld (U.S. 6,301,496) for its description of gray-scale mapping of voltage activation time on the surface of the heart. Reisfeld '496, however, fail to teach or suggest color-coding of ultrasonic reflection energy intensity from echo contrast material in the blood stream to analyze perfusion in each of a plurality of cross-sectional segments of a targeted body region. For the foregoing reasons, the claim rejections under 35 U.S.C. §103 should be withdrawn.

Claims 7 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Sheehan et al. 739, Clark '285, Klotz et al. '646, and further in view of Grenon (U.S. 6,258,033). The Grenon '033 reference, however, fails to cure the defects of Sheehan et al. '739, Clark '285, and Klotz et al. '646, as described above. As such, the claim rejections based thereon should be withdrawn.

Claims 11 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Sheehan et al. '739, Clark '285, and Klotz et al. '646, and

further in view of Kamiyama (U.S. 5,993,391). The Kamiyama '391 reference is cited by the Examiner for its discussion of time-intensity curves of electronic data. However, Kamiyama '391 fails to cure the defects of Sheehan et al. '739, Clark '285, and Klotz et al. '646, as described above. As such, the claim rejections based thereon should be withdrawn.

Claim 13 stands rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Sheehan et al. '739, Clark '285, and Klotz et al. '646, and further in view of Reisfeld (U.S. 6,301,496). As described above, Reisfeld '496 fails to teach or suggest the color-coding of the cross-sectional segments of the presently claimed invention. As such, Reisfeld '496 fails to support the Examiner's assertions, and fails to correct the defects of Sheehan et al. '739, Clark '285, and Klotz et al. '646, as described above.

Claims 18-25 have been cancelled in this amendment, thereby rendering moot the claim rejections thereof. Accordingly, the claim rejections based on Yock (U.S. 6,221,015) are believed to be inapplicable to the presently amended claims. In any event, Yock '015 fails to cure the defects of the remainder of the cited prior art, whether taken alone or in combination.

For the foregoing reasons, the claims as now amended are believed to be unobvious and patentable over the cited prior art, whether taken alone or in combination. Applicant therefore submits that the claims as presented are allowable on the merits. An early allowance is respectfully solicited.

Respectfully submitted,

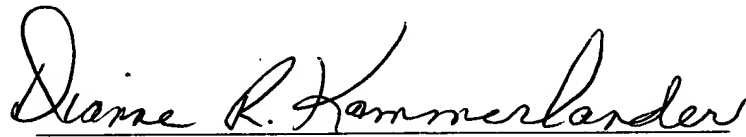
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A handwritten signature in black ink, appearing to read 'Mark J. Burns', written over a horizontal line.

Mark J. Burns, Reg. #46591
Attorney for Applicant
1130 TCF Tower
121 South Eighth Street
Minneapolis, MN 55402
Phone: (612) 339-8300

Certificate of Mailing

I hereby certify that the foregoing Amendment, Petition for Extension of Time and check in the amount of \$510.00 to cover the three-month extension, Amendment transmittal letter, and Transmittal of Formal Drawings (containing Figures 1 and 2) in application Serial No. 09/992,242, filed November 14, 2001 of Aram Aiazian, entitled "SYSTEM FOR CONTRAST ECHO ANALYSIS" are being deposited with the United States Postal Service as First Class mail, postage prepaid, in an envelope addressed to: Box Patent Amendment, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 on this 2nd day of August, 2005.



Dianne R. Kammerlander
On behalf of Mark J. Burns
Attorney for Applicant

Date of Signature: August 2, 2005